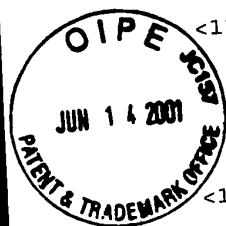SEQUENCE LISTING

<110> BEAUDOIN, Adrien R.
SÉVIGNY, Jean
BACH, Fritz H.
ROBSON, Simon

<120> ATP-DIPHOSPHOHYDROLASES, PROCESS OF PURIFICATION
THEREOF AND PROCESS OF PRODUCING THEREOF BY RECOMBINANT
TECHNOLOGY

<130> 920333.90019

<140> 09/781,796
<141> 2001-02-12

<150> 08/419,204
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Leu Ala Val Gly Leu Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys
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Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile
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Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln

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                              70                    75                    80
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     Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln
                        85                    90                    95

     Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala
                   100                   105                   110

     Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu
              115                   120                   125

     Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu
              130                   135                   140

     Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro
     145                   150                   155                   160

     Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala
                        165                   170                   175

     Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys
                        180                   185                   190

     Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn Gln Glu Thr
              195                   200                   205

     Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val
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     Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg
     225                   230                   235                   240

     Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr
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     Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val
                        260                   265                   270

     Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys
                   275                   280                   285

     Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg
              290                   295                   300

     Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly
              305                   310                   315                   320

     Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser
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Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro
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Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys
           355                  360                365

Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu
         370                 375                 380

Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser
385                  390                  395                   400

Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly
              405                   410                  415

Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp
            420                    425                 430

Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala
           435                  440                  445

Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala
      450              455                  460

Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr Tyr Val Phe Leu
465                  470                  475                   480

Met Val Leu Phe Ser Leu Val Leu Phe Thr Val Ala Ile Ile Gly Leu
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Leu Ile Phe His Lys Pro Ser Tyr Phe Trp Lys Asp Met Val
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    Gly Cys Thr Gly Gly Gly Gly Gly Gly Gly Gly Gly Ala Ala Ala Gly
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Ala Ala Ala Ala Cys Ala Ala Ala Ala Gly Cys Thr Gly Cys Thr Ala
        50   55   60

Cys Thr Thr Ala Thr Gly Gly Ala Ala Gly Ala Thr Ala Cys Ala Ala
65   70   75   80

Ala Gly Gly Ala Gly Thr Cys Thr Ala Ala Cys Gly Thr Gly Ala Ala
                85   90   95

Gly Ala Cys Ala Thr Thr Thr Thr Gly Cys Thr Cys Cys Ala Ala Gly
            100   105   110

Ala Ala Thr Ala Thr Cys Cys Thr Ala Gly Cys Cys Ala Thr Cys Cys
            115   120   125

Thr Thr Gly Gly Cys Thr Thr Cys Thr Cys Cys Thr Cys Thr Ala Thr
    130   135   140

Cys Ala Thr Ala Gly Cys Thr Gly Thr Gly Ala Thr Ala Gly Cys Thr
145   150   155   160

Thr Thr Gly Cys Thr Thr Gly Cys Thr Gly Thr Gly Gly Gly Gly Thr
            165   170   175

Thr Gly Ala Cys Cys Cys Ala Gly Ala Ala Cys Ala Ala Ala Gly Cys
            180   185   190

Ala Thr Thr Gly Cys Cys Ala Gly Ala Ala Ala Ala Cys Gly Thr Thr
    195   200   205

Ala Ala Gly Thr Ala Thr Gly Gly Gly Ala Thr Thr Gly Thr Gly Cys
    210   215   220

Thr Gly Gly Ala Thr Gly Cys Gly Gly Gly Thr Thr Cys Thr Thr Cys
225   230   235   240

Thr Cys Ala Cys Ala Cys Ala Ala Gly Thr Thr Thr Ala Thr Ala Cys
            245   250   255

Ala Thr Cys Thr Ala Thr Ala Ala Gly Thr Gly Gly Cys Cys Ala Gly
    260   265   270

Cys Ala Gly Ala Ala Ala Ala Gly Gly Ala Gly Ala Ala Thr Gly Ala
    275   280   285

Cys Ala Cys Ala Gly Gly Cys Gly Thr Gly Gly Thr Gly Cys Ala Thr
290   295   300

Cys Ala Ala Gly Thr Ala Gly Ala Ala Gly Ala Ala Thr Gly Cys Ala
305   310   315   320

Gly Gly Gly Thr Thr Ala Ala Ala Gly Gly Thr Cys Cys Thr Gly Gly
                         325   330   335

Ala Ala Thr Cys Thr Cys Ala Ala Ala Ala Thr Thr Thr Gly Thr Thr
                         340   345   350

Cys Ala Gly Ala Ala Ala Gly Thr Ala Ala Ala Thr Gly Ala Ala Ala
355   360   365

Thr Ala Gly Gly Cys Ala Thr Thr Thr Ala Cys Cys Thr Gly Ala Cys
370   375   380

Thr Gly Ala Thr Thr Gly Cys Ala Thr Gly Gly Ala Ala Ala Gly Ala
385   390   395   400

Gly Cys Thr Ala Gly Gly Gly Ala Ala Gly Thr Gly Ala Thr Thr Cys
                         405   410   415

Cys Ala Ala Gly Gly Thr Cys Cys Cys Ala Gly Cys Ala Cys Cys Ala
                         420   425   430

Ala Gly Ala Gly Ala Cys Ala Cys Cys Cys Gly Thr Thr Thr Ala Cys
435   440   445

Cys Thr Gly Gly Gly Ala Gly Cys Cys Ala Cys Gly Gly Cys Ala Gly
450   455   460

Gly Cys Ala Thr Gly Cys Gly Gly Thr Thr Gly Cys Thr Cys Ala Gly
465   470   475   480

Gly Ala Thr Gly Gly Ala Ala Ala Gly Thr Gly Ala Ala Gly Ala Gly
                         485   490   495

Thr Thr Gly Gly Cys Ala Gly Ala Cys Ala Gly Gly Gly Thr Thr Cys
500   505   510

Thr Gly Gly Ala Thr Gly Thr Gly Gly Thr Gly Gly Ala Gly Ala Gly
515   520   525

Gly Ala Gly Cys Cys Thr Cys Ala Gly Cys Ala Ala Cys Thr Ala Cys
530   535   540

Cys Cys Cys Thr Thr Thr Gly Ala Cys Thr Thr Cys Cys Ala Gly Gly
545   550   555   560

Gly Thr Gly Cys Cys Ala Gly Gly Ala Thr Cys Ala Thr Thr Ala Cys
                565   570   575

Thr Gly Gly Cys Cys Ala Ala Gly Ala Gly Gly Ala Ala Gly Gly Thr
                580   585   590

Gly Cys Cys Thr Ala Thr Gly Gly Cys Thr Gly Gly Ala Thr Thr Ala
                595   600   605

Cys Thr Ala Thr Cys Ala Ala Cys Thr Ala Thr Cys Thr Gly Cys Thr
610   615   620

Gly Gly Gly Cys Ala Ala Ala Thr Thr Cys Ala Gly Thr Cys Ala Gly
625   630   635   640

Ala Ala Ala Ala Cys Ala Ala Gly Gly Thr Gly Gly Thr Thr Cys Ala
                645   650   655

Gly Cys Ala Thr Ala Gly Thr Cys Cys Cys Ala Thr Ala Thr Gly Ala
                660   665   670

Ala Ala Cys Cys Ala Ala Thr Ala Ala Thr Cys Ala Gly Gly Ala Ala
                675   680   685

Ala Cys Cys Thr Thr Thr Gly Gly Ala Gly Cys Thr Thr Thr Gly Gly
                690   695   700

Ala Cys Cys Thr Thr Gly Gly Gly Gly Gly Ala Gly Cys Cys Thr Cys
705   710   715   720

Thr Ala Cys Ala Cys Ala Ala Gly Thr Cys Ala Cys Thr Thr Thr Thr
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Gly Thr Ala Cys Cys Cys Cys Ala Ala Ala Ala Cys Cys Ala Gly Ala
                740   745   750

Cys Thr Ala Thr Cys Gly Ala Gly Thr Cys Cys Cys Cys Ala Gly Ala
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Thr Ala Ala Thr Gly Cys Thr Cys Thr Gly Cys Ala Ala Thr Thr Thr
770   775   780

Cys Gly Cys Cys Thr Cys Thr Ala Thr Gly Gly Cys Ala Ala Gly Gly
785   790   795   800

Ala Cys Thr Ala Cys Ala Ala Thr Gly Thr Cys Thr Ala Cys Ala Cys
805   810   815

Ala Cys Ala Thr Ala Gly Cys Thr Thr Cys Thr Thr Gly Thr Gly Cys
820   825   830

Thr Ala Thr Gly Gly Gly Ala Ala Gly Gly Ala Thr Cys Ala Gly Gly
835   840   845

Cys Ala Cys Thr Cys Thr Gly Gly Cys Ala Gly Ala Ala Ala Cys Thr
850   855   860

Gly Gly Cys Cys Ala Ala Gly Gly Ala Cys Ala Thr Thr Cys Ala Gly
865   870   875   880

Gly Thr Thr Gly Cys Ala Ala Gly Thr Ala Ala Thr Gly Ala Ala Ala
885   890   895

Thr Thr Cys Thr Cys Ala Gly Gly Gly Ala Cys Cys Cys Ala Thr Gly
900   905   910

Cys Thr Thr Thr Cys Ala Thr Cys Cys Thr Gly Gly Ala Thr Ala Thr
915   920   925

Ala Ala Gly Ala Ala Gly Gly Thr Ala Gly Thr Gly Ala Ala Cys Gly
930   935   940

Thr Ala Ala Gly Thr Gly Ala Cys Cys Thr Thr Thr Ala Cys Ala Ala
945   950   955   960

Gly Ala Cys Cys Cys Cys Cys Thr Gly Cys Ala Cys Cys Ala Ala Gly
965   970   975

Ala Gly Ala Thr Thr Thr Gly Ala Gly Ala Thr Gly Ala Cys Thr Cys
980   985   990

Thr Thr Cys Cys Ala Thr Thr Cys Cys Ala Gly Cys Ala Gly Thr Thr
995   1000   1005

Thr Gly Ala Ala Ala Thr Cys Cys Ala Gly Gly Gly Thr Ala Thr Thr
1010   1015   1020

Gly Gly Ala Ala Ala Cys Thr Ala Thr Cys Ala Ala Cys Ala Ala Thr
1025   1030   1035   1040

Gly Cys Cys Ala Thr Cys Ala Ala Ala Gly Cys Ala Thr Cys Cys Thr
1045   1050   1055

Gly Gly Ala Gly Cys Thr Cys Thr Thr Cys Ala Ala Cys Ala Cys Cys
1060   1065   1070

Ala Gly Thr Thr Ala Cys Thr Gly Cys Cys Cys Thr Thr Ala Cys Thr
1075   1080   1085

Cys Cys Cys Ala Gly Thr Gly Thr Gly Cys Cys Thr Thr Cys Ala Ala
1090   1095   1100

Thr Gly Gly Gly Ala Thr Thr Thr Thr Cys Thr Thr Gly Cys Cys Ala
1105   1110   1115   1120

Cys Cys Ala Cys Thr Cys Cys Ala Gly Gly Gly Gly Gly Ala Thr Thr
1125   1130   1135

Thr Thr Gly Gly Gly Gly Cys Ala Thr Thr Thr Thr Cys Ala Gly Cys
1140   1145   1150

Thr Thr Thr Thr Thr Ala Cys Thr Thr Thr Gly Thr Gly Ala Thr Gly
1155   1160   1165

Ala Ala Gly Thr Thr Thr Thr Thr Ala Ala Ala Cys Thr Thr Gly Ala
1170   1175   1180

Cys Ala Thr Cys Ala Gly Ala Gly Ala Ala Ala Gly Thr Cys Thr Cys
1185   1190   1195   1200

Thr Cys Ala Gly Gly Ala Ala Ala Ala Gly Gly Thr Gly Ala Cys Thr
1205   1210   1215

Gly Ala Gly Ala Thr Gly Ala Thr Gly Ala Ala Ala Ala Ala Gly Thr
1220   1225   1230

Thr Cys Thr Gly Thr Gly Cys Thr Cys Ala Gly Cys Cys Thr Thr Gly
1235   1240   1245

Gly Gly Ala Gly Gly Ala Gly Ala Thr Ala Ala Ala Ala Ala Cys Ala
1250   1255   1260

Thr Cys Thr Thr Ala Cys Gly Cys Thr Gly Gly Ala Gly Thr Ala Ala
1265   1270   1275   1280

Ala Gly Gly Ala Gly Ala Ala Gly Thr Ala Cys Cys Thr Gly Ala Gly
1285   1290   1295

Thr Gly Ala Ala Thr Ala Cys Thr Gly Cys Thr Thr Thr Thr Cys Thr
1300   1305   1310

Gly Gly Thr Ala Cys Cys Thr Ala Cys Ala Thr Thr Cys Thr Cys Thr
1315   1320   1325

Cys Cys Cys Thr Cys Cys Thr Thr Cys Thr Gly Cys Ala Ala Gly Gly
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Cys Thr Ala Thr Cys Ala Thr Thr Thr Cys Ala Cys Ala Gly Cys Thr
1345   1350   1355   1360

Gly Ala Thr Thr Cys Cys Thr Gly Gly Gly Ala Gly Cys Ala Cys Ala
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Gly Ala Thr Cys Cys Ala Gly Gly Gly Cys Ala Gly Cys Gly Ala Cys
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Gly Cys Cys Gly Gly Cys Thr Gly Gly Ala Cys Thr Thr Thr Gly Gly
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Gly Cys Thr Ala Cys Ala Thr Gly Cys Thr Gly Ala Ala Cys Cys Thr
1425   1430   1435   1440

Gly Ala Cys Cys Ala Ala Cys Ala Thr Gly Ala Thr Cys Cys Cys Ala
   1445   1450   1455

Gly Cys Thr Gly Ala Gly Cys Ala Ala Cys Cys Ala Thr Thr Gly Thr
  1460   1465   1470

Cys Cys Ala Cys Ala Cys Cys Thr Cys Thr Cys Thr Cys Cys Cys Ala
  1475   1480   1485

Cys Thr Cys Cys Ala Cys Cys Thr Ala Thr Gly Thr Cys Thr Thr Cys
 1490   1495   1500

Cys Thr Cys Ala Thr Gly Gly Thr Thr Cys Thr Ala Thr Thr Cys Thr
1505   1510   1515   1520

Cys Cys Cys Thr Gly Gly Thr Cys Cys Thr Thr Thr Thr Cys Ala Cys
   1525   1530   1535

Ala Gly Thr Gly Gly Cys Cys Ala Thr Cys Ala Thr Ala Gly Gly Cys
   1540   1545   1550

Thr Thr Gly Cys Thr Thr Ala Thr Cys Thr Thr Thr Cys Ala Cys Ala
  1555   1560   1565

Ala Gly Cys Cys Thr Thr Cys Ala Thr Ala Thr Thr Thr Cys Thr Gly
1570   1575   1580

Gly Ala Ala Ala Gly Ala Thr Ala Thr Gly Gly Thr Ala Thr Ala Gly
1585   1590   1595   1600

Cys Ala Ala Ala Ala Gly Cys Ala Gly Cys Thr Gly Ala Ala Ala Thr
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Ala Thr Gly Cys Thr Gly Gly Cys Thr Gly Gly Ala Gly Thr Gly Ala
            1620   1625   1630

Gly Gly Ala Ala Ala Ala Ala Ala Thr Cys Gly Thr Cys Cys Ala Gly
        1635   1640   1645

Gly Gly Ala Gly Cys Ala Thr Thr Thr Thr Cys Cys Thr Cys Cys Ala
        1650   1655   1660

Thr Cys Gly Cys Ala Gly Thr Gly Thr Thr Cys Ala Ala Gly Gly Cys
1665   1670   1675   1680

Cys Ala Thr Cys Cys Thr Thr Cys Cys Cys Thr Gly Thr Cys Thr Gly
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Cys Cys Ala Gly Gly Gly Cys Cys Ala Gly Thr Cys Thr Thr Gly Ala
        1700   1705   1710

Cys Gly Ala Gly Thr Gly Thr Gly Ala Ala Gly Cys Thr Thr Cys Cys
        1715   1720   1725

Thr Thr Gly Gly Cys Thr Thr Thr Thr Ala Cys Thr Gly Ala Ala Gly
        1730   1735   1740

Cys Cys Thr Thr Thr Cys Thr Thr Thr Thr Gly Gly Ala Gly Gly Thr
1745   1750   1755   1760

Ala Thr Thr Cys Ala Ala Thr Ala Thr Cys Cys Thr Thr Thr Gly Cys
        1765   1770   1775

Cys Thr Cys Ala Ala Gly Gly Ala Cys Thr Thr Cys Gly Gly Cys Ala
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Thr Gly Ala Gly Thr Thr Thr Thr Thr Cys
1810   1815

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Ser Thr Gln

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